

**Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal**

Section 1. General administrative information

Evaluate Effects Of Habitat Work Conducted In Fifteenmile Creek

Bonneville project number, if an ongoing project 9146

Business name of agency, institution or organization requesting funding
Oregon Department of Fish and Wildlife

Business acronym (if appropriate) ODFW

Proposal contact person or principal investigator:

Name Erik Olsen
Mailing Address 3450 West 10th
City, ST Zip The Dalles, OR 97058
Phone 541-296-8045
Fax 541-296-7889
Email address

Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name

NPPC Program Measure Number(s) which this project addresses.
3.1B,3.2,3.3D.1

NMFS Biological Opinion Number(s) which this project addresses.

Other planning document references.

Columbia River Intertribal Fish Commission. 1996. Wy-Kan-Ush-Mi Wa-Kish-Wit. Spirit of the salmon. The Columbia River anadromous fish restoration plan of the Nez Perce, Umatilla, Warm Springs, and Yakama tribes. Portland, Oregon, Volume II:34-35.

Subbasin.Fifteenmile Creek

Short description.

Estimate smolt production and adult escapements for the indigenous wild population of winter steelhead in Fifteenmile Creek and collect information on selected life history and biological characteristics of the population.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish		Construction		Watershed
	Resident fish		O & M		Biodiversity/genetics
	Wildlife		Production	X	Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate	X	Monitoring/eval.		Flow/survival
	Other		Resource mgmt		Fish disease
			Planning/admin.		Supplementation
			Enforcement		Wildlife habitat en-
			Acquisitions		hancement/restoration

Other keywords.

Production, Escapements, Life history

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship
93040	Fifteenmile Creek Habitat Restoration Project	This project will be evaluated by the proposed project.

Section 4. Objectives, tasks and schedules**Objectives and tasks**

Obj 1,2,3	Objective	Task a,b,c	Task
1	Determine wild winter steelhead smolt production from the	a	Estimate numbers of downstream migrant wild winter steelhead

	Fifteenmile Creek subbasin.		smolts past a migrant trap located near the mouth of Fifteenmile Creek.
1		b	Estimate the temporal distribution of downstream migrant smolt winter steelhead.
1		c	Estimate age structure of downstream migrant winter steelhead smolts.
1		d	Estimate selected morphometric characteristics of downstream migrant wild winter steelhead smolts: including mean fork length (mm) and condition factor.
1		e	Compile and analyze wild juvenile smolt winter steelhead data collected during the field season and provide a summary of the data in an annual progress report.
1		f	Record numbers of downstream migrant lamprey caught in the migrant trap.
2	Determine escapements of wild adult winter steelhead to the Fifteenmile Creek subbasin.	a	Estimate escapements of wild adult winter steelhead to an adult trapping facility located near the mouth of Fifteenmile Creek.
2		b	Estimate temporal distribution of upstream migrant adult winter steelhead escaping to Fifteenmile Creek.
2		c	Estimate age structure of upstream migrant adult winter steelhead escaping to Fifteenmile Creek.
2		d	Estimate selected morphometric characteristics of wild adult winter steelhead escaping to Fifteenmile Creek: including sex ratio, mean fork length (mm), and mean weight (gm).
2		e	Compile and analyze wild adult winter steelhead data collected during the field season and provide a summary of the data in an annual progress report.
2		f	Record numbers of adult lamprey

			caught in the adult migrant trap.
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Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	2/1999		52.00%
2	3/1999		48.00%
			TOTAL 100.00%

Schedule constraints.

Our ability to implement this project, as proposed and budgeted, will be determined by how effectively we can integrate this project with the Hood River/Pelton ladder project and The Fifteenmile Creek project..

Completion date.

Ongoing

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel		\$43,955
Fringe benefits		\$17,582
Supplies, materials, non-expendable property		\$14,210
Operations & maintenance		
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		
PIT tags	# of tags:	
Travel		\$2,880
Indirect costs		\$18,005
Subcontracts		
Other		
TOTAL		\$96,632

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	\$97,000	\$102,000	\$107,000	\$112,000
O&M as % of total	20.00%	20.00%	20.00%	20.00%

Section 6. Abstract

This project proposes estimating wild winter steelhead smolt production and adult winter steelhead escapements for the Fifteenmile Creek subbasin. A mark and recapture program will be implemented at a downstream migrant screw trap to estimate subbasin smolt production and an upstream migrant adult trap will be used to determine adult escapements. Data will be used to monitor trends in both parameters and to determine if natural production of wild winter steelhead is increasing through time. An upward trend in natural production of wild winter steelhead will be used to indicate that the Fifteenmile Creek Habitat Improvement Project (BPA Project #93-040) has benefited natural wild winter steelhead production based on the fact that no other major changes in land management practices have occurred in the subbasin that would cause a significant increase in subbasin production. This project is expected to require a long term commitment in resources (i.e., 8 or more years) because of 1) the life history characteristics of winter steelhead, 2) the severity of habitat degradation in the Fifteenmile Creek subbasin, and 3) the long time frame required for the effects of habitat improvement work to become manifest.

Section 7. Project description

a. Technical and/or scientific background.

The Fifteenmile Creek subbasin supports the eastern most stock of wild winter steelhead (*Onchorynchus mykiss*) in the Columbia River Basin. The population has never been supplemented with hatchery steelhead although a limited number (i.e., approximately 500) of hatchery legal rainbow trout were released annually through 1987, near the city of Dufur, to support a local area fishery. Escapements of adult winter steelhead are currently depressed below historical levels. Low escapements are primarily attributed to the loss, or degradation, of habitat in the subbasin, but also occurs as a result of both juvenile and adult passage related problems at Bonneville Dam.

The Bonneville Power Administration (BPA) began implementing habitat improvement projects in the Fifteenmile Creek subbasin beginning in 1986. The program was entitled The Fifteenmile Creek Habitat Improvement Project (Fifteenmile Creek project; Project Number 93-040; Contract # 95BI60772). Tasks were designed to improve egg to smolt survival and to facilitate the passage of both upstream migrant adult, and downstream migrant juvenile, winter steelhead past man made impediments to the migration of salmonids. Projects designed to improve habitat in the subbasin were identified and

prioritized in the Fifteenmile Basin Fish Habitat Improvement and Implementation Plan (Smith et al. 1987). Actions taken, to date, include: 1) the fencing of approximately 80 miles of stream, 2) placement of in-stream structure in approximately 21 miles of stream, 3) the construction and installation of 120 irrigation screens, and 4) the construction of 6 fish passage structures at water diversions. The ongoing operation and maintenance of these projects has also been funded by the BPA.

There currently exists only limited quantitative or qualitative biological data to 1) assess the current status of the wild winter steelhead population and 2) evaluate habitat improvement work implemented in the Fifteenmile Creek subbasin. The only long term data set available for evaluating either parameter are annual spawning ground counts made at selected index sites located throughout the subbasin. Annual spawning ground surveys were conducted beginning in 1964. These surveys provide information that can be used to infer, in a general sense, the status of the wild winter steelhead population but do not provide the necessary quantitative biological data needed to accurately define two of the more important indices of population health; which are subbasin smolt production and adult wild winter steelhead escapements.

The ability to accurately define the benefits associated with a specific habitat improvement project, or group of projects, would be difficult, if not unfeasible, because of the lack of any pre-treatment data and a variety of confounding factors. This project proposes collecting three to five consecutive years worth of data on smolt production and adult escapements to provide information critical to evaluating the current status of the indigenous population of wild winter steelhead; the status of which is presently unclear. A more long term data set on smolt production and adult escapements, collected over eight or more consecutive years, would primarily be used to determine if there is a general upward trend in wild winter steelhead production in the Fifteenmile Creek subbasin. A significant increase in smolt production would be used as an indicator that habitat improvement work has had a beneficial impact on natural production based on the fact that no recent changes in land management practices have occurred in the Fifteenmile Creek subbasin that would have resulted in a significant increase in wild production.

Although not specifically identified in the Northwest Power Planning Council's Fish and Wildlife Program (FWP) report (NPPC 1994), this M&E project facilitates the FWP by addressing measures identified in Section 3. Section 3 defines the need to "monitor overall program implementation, evaluate the effectiveness of actions taken, and judge their scientific merits." (NPPC 1994). This project would provide the information needed to achieve this goal and directly addresses the data requirements for measure 3.3D.1. The need for collecting baseline information on the current status of the wild winter steelhead population in Fifteenmile Creek is also specifically identified in Columbia River Intertribal Fish Commission (1996; i.e., the Wy-Kan-Ush-Mi Wa-Kish-Wit. Spirit of the salmon.)

This proposal is a request for continued funding of a research project that was newly proposed for FY 98. Assuming the FY 98 proposal is approved and can be implemented

in a timely manner, then work planned for FY 99 would include 1) operation and maintenance of a juvenile migrant trap, 2) estimating numbers of winter steelhead smolts migrating from the Fifteenmile Creek subbasin, 3) estimating escapements of adult winter steelhead to Fifteenmile Creek, 4) collection of life history and biological data from winter steelhead smolts collected at the juvenile migrant trap, and 5) collection of life history and biological data from adult winter steelhead collected at the adult migrant trap. Both the juvenile and adult migrant traps will be located near the mouth of Fifteenmile Creek (i.e., approximately RM 1). The proposed FY 98 contract would provide the dollars to develop a juvenile migrant trapping site and to construct an adult trap. Assuming the FY 98 contract is funded and work can be completed on time, then the juvenile trap would be operational in March 1999 to estimate smolt production and the adult migrant trap in December 1998 to estimate adult winter steelhead escapements in the 1998-99 run year.

This project would be implemented with assistance from personnel working on the Hood River/Pelton ladder evaluation project (Hood River Production Program) and the Fifteenmile Creek project. This should reduce the overall administrative costs associated with implementing this project and will provide access to personnel with extensive experience in areas that will be useful in facilitating the timely completion of product deliverables.

Permanent and seasonal personnel from the Fifteenmile Creek project would be used to maintain the adult migrant trap. These personnel have extensive experience in the operation and maintenance of fish ladders and diversions in both the Fifteenmile Creek subbasin and in the Trout Creek drainage (Deschutes River subbasin). Permanent personnel on the Hood River/Pelton ladder evaluation project would be responsible for supervising personnel hired to 1) operate and maintain the juvenile migrant trap; 2) summarize and analyze biological data; and 3) prepare an annual progress report. Personnel on the Hood River/Pelton ladder evaluation project have implemented similar work for the last four years in the Hood River subbasin and bring to this project extensive experience in the operation and maintenance of juvenile and adult migrant traps and in the summarization and analysis of complex biological data.

b. Proposal objectives.

Objective 1. Determine wild winter steelhead smolt production from the Fifteenmile Creek subbasin.

Null Hypothesis: Wild winter steelhead smolt production has not shown any significant increase subsequent to habitat improvement work conducted in the subbasin.

Alternative: Wild winter steelhead smolt production has shown a significant increase subsequent to habitat improvement work conducted in the subbasin.

We propose conducting a mark and recapture program to estimate numbers of wild winter steelhead smolts migrating out of the Fifteenmile Creek subbasin. Data will be used to

ascertain current levels of smolt production and to determine if wild production is increasing through time in conjunction with the restoration of anadromous salmonid habitat by the Fifteenmile Creek Habitat Improvement Project. Estimates will be summarized annually in a research progress report. Ancillary life history and biological data collected at the migrant traps will also be summarized in the annual progress report. Summaries Data will provide information on winter steelhead smolt migration timing, age structure, mean fork length (mm), and mean condition factor. We also propose counting the number of downstream migrant lamprey caught in the migrant trap to determine the feasibility of estimating the number of outmigrants leaving the subbasin.

Objective 2. Determine escapements of wild adult winter steelhead to the Fifteenmile Creek subbasin.

Null Hypothesis: Escapements of adult wild winter steelhead have not increased significantly subsequent to habitat improvement work conducted in the subbasin.

Alternative: Escapements of adult wild winter steelhead have increased significantly subsequent to habitat improvement work conducted in the subbasin.

We propose estimating escapement of wild adult winter steelhead to the Fifteenmile Creek subbasin. Data will be used to ascertain current escapements and to determine if escapements are increasing through time in conjunction with the restoration of anadromous salmonid by the Fifteenmile Creek Habitat Improvement Project. Escapements will be summarized annually in a research progress report. Ancillary adult life history and biological data collected at the adult migrant trap will also be summarized in the annual progress report. Summaries will provide information on adult winter steelhead migration timing, age structure, mean fork length (cm) and weight (gm), and sex ratio as a percentage of females. We also propose counting adult migrants caught in the adult migrant trap to investigate the feasibility of estimating numbers escaping to the subbasin.

c. Rationale and significance to Regional Programs.

This project is designed to provide information that will be used to determine if habitat improvement work, implemented by the Fifteenmile Creek project, has had a beneficial impact on wild winter steelhead production in the Fifteenmile Creek subbasin. Implementation of this project will be closely integrated with both the Fifteenmile Creek project and the Hood River Pelton ladder project, with respect to 1) the supervision of personnel and 2) the maintenance of juvenile and adult trapping facilities. Integration of specific components of this project, into these two existing projects, should help to minimize the annual costs associated with the proposed project.

d. Project history

This is a new project which was proposed for FY 98.

e. Methods.

Objective 1.

Downstream migrant rainbow trout, winter steelhead smolts, and lamprey will be trapped at a rotary-screw trap located at approximately RM 1 in Fifteenmile Creek. The screw traps will be sampled on a daily basis. Sampling will be conducted primarily in the morning to reduce temperature related stress. Juvenile salmonids will be anesthetized, examined for marks, and counted. Counts of downstream migrant rainbow-steelhead (rb-st) will be made for two size categories; they will include fish greater than or equal to 150 mm fork length and fish less than 150 mm fork length. This separation into two size categories will be made because data from other studies indicates the smaller size category is predominately comprised of age 0 migrants which are not considered to be smolts. The cutoff defining each size category may change as subbasin specific data is collected at the screw trap. A random sample of juvenile salmonids, collected from both size categories, will be measured to the nearest millimeter fork length, weighed to the nearest 0.1 gram, and have a sample of scales taken for purposes of aging the juvenile. Downstream migrant lamprey will be counted and released below the trap. Data will be recorded on computerized data entry forms and keypunched into a computer database. Juvenile scale samples will be transferred to glass slides and read by trained personnel located at ODFW's research lab in Corvallis.

Downstream migrant rb-st trapped at the migrant trap will be used to indirectly estimate winter steelhead smolt migration timing and production because no accurate methodology exists to visually identify rainbow trout from downstream migrant steelhead smolts. A mark and recapture methodology will be used to estimate numbers of migrant rb-st passing the migrant trap. Downstream migrants will be marked with a panjet needle-less injector. The panjet will be used to shoot a narrow high speed stream of colored dye at selected fins. This process will be used to mark the fin with a unique color code by infusing a small amount of colored dye below the epidermal layer. The dye color and marked fin combination will be changed every two weeks to uniquely mark fish at defined time intervals throughout the period of smolt migration.

A pooled Petersen estimate with Chapman's modification (Ricker 1975) will be used to estimate numbers of downstream migrants, by size category. Approximate 95% confidence intervals will be calculated according to methods described in Olsen et al. (1996).

Winter steelhead data will be summarized to provide estimates of smolt production, mean fork length, and mean condition factor, by age category. Summaries will be formatted both by brood year and year of sampling. Migration timing will also be characterized by age category and for the sample population. Data will be summarized in an annual progress report.

Constraints: Several uncertainties make it difficult to evaluate our ability to accurately estimate numbers of downstream migrant winter steelhead smolts in Fifteenmile Creek. The lack of pre-existing or recent biological information makes it difficult to determine if current population sizes will allow us to mark and recapture enough juveniles to develop an accurate estimate of smolt production. Trapping efficiency will also effect our ability to obtain adequate sample sizes. Recapture rates at a floating screw trap operated at a site located near the mouth of the Hood River average 5-8%. Highly fluctuating streamflows and heavy debris loads, common in the Fifteenmile Creek subbasin, may effect our ability to achieve similar catch rates. Depending on what types of problems are encountered it may be necessary to either adjust our operating schedules or to identify alternative trapping sites. Few other alternative trapping sites are available, however, that would alleviate these problems and still provide the capability of estimating smolt production for the entire subbasin.

Objective 2.

Upstream migrant adult wild winter steelhead will be trapped at an adult trapping facility located at approximately RM 1 in Fifteenmile Creek. The trapping facility will be operated daily during the migration period for winter steelhead. The trap will be checked in the morning to minimize potential handling stress associated with sampling fish during the afternoon when water temperatures are typically higher.

Adult winter steelhead will be anesthetized with CO₂, classified by sex, and examined for injuries. Injuries will be categorized as either a predator scar, net mark, hook scar, or scrape. Predator scars will include both closed and open wounds. A random sample of adults will be weighed to the nearest kg, measured to the nearest centimeter fork length, and have a sample of scales taken to age the adult. Data will be recorded on computerized data entry forms and keypunched into a computer database. Adult scale samples will be transferred to gummed cards and sent to ODFW's research lab in Corvallis where an acetate impression will be made of each card and they will be read by trained personnel. All adults collected at the adult migrant trap will be floy tagged prior to release. Floy tags will provide the capability of identifying recaptures at the adult migrant trap.

Adult winter steelhead data will be summarized to provide estimates of escapement, sex ratio, mean fork length, and mean weight, by age category. Summaries will be formatted both by brood year and run year. Adult migration timing will also be characterized for the sample population. Data will be summarized in an annual progress report.

Adult lamprey will be counted, when observed, and we will examine the feasibility of estimating numbers escaping to the subbasin.

Constraints: We propose constructing the adult trapping facility during the summer of 1998 to estimate escapements beginning with the 1998-99 run year. We do not

anticipate any problems achieving this schedule assuming that the FY 98 project proposal is funded as proposed. The primary constraint associated with estimating adult winter steelhead escapements to the Fifteenmile Creek subbasin pertain to environmental conditions that exist during the peak period of migration. Fifteenmile Creek is subject to highly fluctuating stream flows and heavy debris load during the spring when wild adult winter steelhead are returning to the subbasin. These conditions may make it economically unfeasible, and physically impossible, to operate and maintain the adult migrant trap.

Little is known about lamprey in the Fifteenmile Creek subbasin but based on observations of adult lamprey migrating in the Deschutes River it appears unlikely that we will be able to estimate adult lamprey escapements using only the adult migrant trap.

f. Facilities and equipment.

Approach: We propose estimating adult winter steelhead escapements and subbasin smolt production for the Fifteenmile Creek subbasin. This project would be implemented out of a field station located in The Dalles, Oregon. The field station provides an office, conference room, lobby, large shop, storage area, and parking. The shop is supplied with the machine tools required to repair both the juvenile and adult migrant traps and the office is supplied with the necessary office equipment. This project would have one vehicle (i.e., 4x4 pickup) which would be parked at the field station. All major office supplies and field equipment, needed to implement this project, would be purchased under the contract proposed for FY 98 (i.e., new contract). Major office supplies would include one computer. Major field equipment and facilities would include one downstream migrant trap and one adult migrant trap. We do not anticipate the need to purchase any high-cost equipment in FY 99. The costs associated with leasing or renting machine tools and office equipment would be shared with other projects operating out of the field station.

g. References.

- Columbia River Intertribal Fish Commission. 1996. Wy-Kan-Ush-Mi Wa-Kish-Wit. Spirit of the salmon. The Columbia River anadromous fish restoration plan of the Nez Perce Umatilla, Warm Springs, and Yakama tribes. Portland, Oregon, Volume II::34-35
- Olsen, E.A., R.A. French, and A.D.Ritchey. 1996. Hood River and pelton ladder evaluation studies. Annual Progress Report of Oregon Department of Fish and Wildlife (Project Numbers 88-29, 89-29-01, 89-053-03, 89-053-04, and 93-019; Contract Numbers DE-BI79-89BP00631, DE-BI79-89BP00632, DE-BI79-93BP81756, DE-BI79-93BP81758, DE-BI79-93BP99921) to Bonneville Power Administration, Portland, Oregon.

Ricker, W.E. 1975. Computation and interpretation of biological statistics of fish populations. Bulletin of the Fisheries Research Board of Canada 191, Ottawa, Ontario.

Northwest Power Planning Council. 1994. Columbia River basin fish and wildlife program. Report of the Northwest Power Planning Council (Report No. 94-55), Portland, Oregon.

Smith, R., D. Heller, J. Newton, H. Forsgren, R. Boyce, and K. MacDonald. 1987. Fifteenmile basin fish habitat improvement implementation plan. Report of Oregon Department of fish and Wildlife to Bonneville Power Administration, Portland, Oregon.

Section 8. Relationships to other projects

We propose integrating this project with activities associated with the Hood River/Pelton ladder project and the Fifteenmile Creek Habitat Improvement Project (Fifteenmile Creek project). Personnel on the Fifteenmile Creek project would maintain the juvenile and adult trapping facilities. Personnel on the Hood River/Pelton ladder project would 1) assist in the operation of the juvenile migrant trap, 2) supervise project personnel, 3) assist project personnel in summarizing and analyzing data, and 4) prepare the annual report. The integration of the project into these two other ongoing projects should significantly reduce the annual administrative costs associated with implementing this project.

Section 9. Key personnel

Program Leader (Chip Dale; FTE 0.04)

Education

1986 Colorado State University, Fort Collins, CO.

Degree: MS in Wildlife Biology

1977 Colorado State University, Fort Collins, CO.

Degree: BS in Wildlife Biology

Training

AFS Habitat Workshop, Bellevue, WA. 1991

State of Oregon DAS Core Curriculum for Managers and Supervisors.

USFS GAWS Aquatic Habitat Inventory.

Experience

1993 – Present

Oregon Department of Fish and Wildlife Assistant Regional Supervisor (Fisheries).

Administer the fisheries resources of the High Desert Region of ODFW.

Programs include research, habitat, Fisheries, and Propagation. Administer

Programs involving ~60 FTE's and ~\$3.5 million dollar budget.

1983-1990

Denver Water Department, Environmental Planner.

Responsible for planning and implementation of habitat restoration projects for mitigation for mitigation of impacts related to dam construction. Also oversaw inventory programs conducted jointly with Colorado Division of Wildlife to measure fish population abundance in impacted reaches of rivers affected by Denver Water District's operations.

Reports authored or co-authored

Dale, A. R. and J. A. Bailey. 1982. Application of optimal foraging theory for bighorn sheep habitat analysis. Proc. 3rd Bienn. Symp. North Wild Sheep and Goat Counc. Pp 254-264.

Chilcote, M., K. Kostow, H. Weeks, H. Schaller, and A. Dale. 1991. First Biennial Report on Status of Oregon's Wild Fish Populations. ODFW.

Project Leader (Erik Olsen; Hood River/Pelton ladder project; FTE 0.08)

Education

1970-1974 Portland State University, Portland, Oregon

Major: Biology

1974-1976 Oregon State University, Corvallis, Oregon

Degree: B.S. in Fisheries Science

Experience

12/92-Present

Oregon Department of Fish and Wildlife

Project leader on the Hood River/Pelton ladder project (Project No. 88-053-04). Primary responsibilities include: 1) project administration, 2) preparation of a research sampling plan to evaluate a hatchery supplementation program and to collect information on the life history and biology of anadromous and resident salmonids in the Hood River subbasin, 3) summarizing and analyzing project data, and 4) preparation of annual progress reports and statements of work. Experience gained in 1) the development and maintenance of databases, 2) development of software to summarize data using both FORTRAN and Fox Pro programming languages, and 3) the life history and biology of anadromous salmonids.

06/90-11/92

Oregon Department of Fish and Wildlife

Project leader on the Coordinated Information System (Project No. 88-108; Contract No. DE-FC79-89BP94402). Primary responsibilities include: 1) project administration, 2) preparation of a standardized reporting format for reporting information on the life history and biology of anadromous salmonids in Oregon subbasins to the Columbia River basin, 3) preparation of a report, summarizing in a standardized format, all available information on the life history and biology of anadromous salmonids in Oregon subbasins to the Columbia River Basin, and 4) preparation of quarterly reports and statements of work. Experience gained in 1) the presentation and summarization of complex biological data, 2) development and maintenance

of databases, 3) development of software to summarize data using both FORTRAN and Fox Pro programming languages, 4) the life history and biology of stocks of anadromous salmonids located throughout the Columbia River Basin, and 5) issues pertaining to the management of stocks of anadromous salmonids in the Columbia River Basin.

Reports authored or co-authored

- Lindsay, R.B., W.J. Knox, M.W. Flesher, B.J. Smith, E.A. Olsen, and L.S. Lutz. 1986. Study of wild spring chinook salmon in the John Day River system. Final Report of Oregon Department of Fish and Wildlife (Project No. 79-4; Contract No. DE-A179-83BP39796) to Bonneville Power Administration, Portland, Oregon.
- Olsen, E.A., R.A. French, and J.A. Newton. 1994. Hood River and pelton ladder evaluation studies. Annual Progress Report of Confederated Tribes of the Warm Springs Reservation and Oregon Department of Fish and Wildlife (Project Numbers 89-29, 89-29-01, 89-053-03, 89-053-04, and 93-019; Contract Numbers DE-BI79-89BP00631, DE-BI79-89BP00632, DE-BI79-93BP81756, DE-BI79-93BP81758, DE-BI79-93BP99921) to Bonneville Power Administration, Portland, Oregon.
- Olsen, E.A., R.A. French, and A.D. Ritchey. 1995. Hood River and pelton ladder evaluation studies. Annual Progress Report of Oregon Department of Fish and Wildlife and Confederated Tribes of the Warm Springs Reservation (Project Numbers 88-29, 89-29-01, 89-053-03, 89-053-04, and 93-019; Contract Numbers DE-BI79-89BP00631, DE-BI79-89BP00632, DE-BI79-93BP81756, DE-BI79-93BP81758, DE-BI79-93BP99921) to Bonneville Power Administration, Portland, Oregon.
- Olsen, E.A., R.A. French, and A.D. Ritchey. 1996. Hood River and pelton ladder evaluation studies. Annual Progress Report of Oregon Department of Fish And Wildlife (Project Numbers 88-29, 89-29-01, 89-053-03, 89-053-04, and 93-019; Contract Numbers DE-BI79-89BP00631, DE-BI79-89BP00632, DE-BI79-93BP81756, DE-BI79-93BP81758, DE-BI79-93BP99921) to Bonneville Power Administration, Portland, Oregon.
- Olsen, E.A., and R.B. Lindsay. 1984. Evaluation of habitat improvements – John Day River. Closing Quarterly Report of Oregon Department of Fish and Wildlife (Project Number 82-9) to Bonneville Power Administration, Portland, Oregon.
- Olsen, E.A., and R.B. Lindsay. Undated. Summer steelhead in the Deschutes River, Oregon. Information Reports (Fish) of the Oregon Department of Fish and Wildlife, Portland, Oregon. (Unpublished draft.)
- Olsen, E., P. Pierce, M. McLean, and K. Hatch. 1992. Stock summary reports for Columbia River anadromous salmonids, volume I: Oregon. Final Report of Oregon Department of Fish and Wildlife (Project No. 88-108; Contract No. DE-FC79-89BP94402) to Bonneville Power Administration, Portland, Oregon.
- Olsen, E., P. Pierce, M. McLean, and K. Hatch. 1992. Stock summary reports for Columbia River anadromous salmonids, volume II: Oregon. Final

Report of Oregon Department of Fish and Wildlife (Project No. 88-108; Contract No. DE-FC79-89BP94402) to Bonneville Power Administration, Portland, Oregon.

Oregon Department of Fish and Wildlife and Confederated Tribes of the Warm Springs Reservation of Oregon. 1990. Hood River subbasin salmon and steelhead production plan. Columbia Basin System Planning Report to Northwest Power Planning Council, Portland, Oregon.

Oregon Department of Fish and Wildlife and Confederated Tribes of the Warm Springs. Undated. Hood River/Pelton ladder master agreement. Project Plan of Oregon Department of Fish and Wildlife and Confederated Tribes of the Warm Springs Reservation of Oregon (Project 89-029; Contract DE-BI79-93BP81758) to Bonneville Power Administration, Portland, Oregon. (Unpublished draft.)

Project Leader (Ray Hartlerode; Fifteenmile Creek project; FTE 0.04)

Education

1979 – 1983 Oregon State University; Corvallis, Oregon
Degree: B.S. in Fisheries Science

Training

AFS Riparian Restoration Workshop
NMFS Fish Passage and Diversion Structures Training
State of Oregon DAS Core Curriculum Training for Managers and Supervisors
Northwest Fish Screening and Passage Workshops

Experience

1991-Present, Oregon Department of Fish & Wildlife; Project Leader on Fifteenmile, Trout, and Buckhollow Creek Habitat Restoration Projects. Project Leader on N.E. Oregon Screens Trout Creek Passage Project, Project Leader for NMFS Mitchell Act Fifteenmile/Trout Creek Fish Screens Project.

Duties

Fiscal management of project budgets, supervision of project personnel to implement and maintain fish habitat projects, preparation of proposals, works statements, contracts, leases, and reports, coordination of habitat projects with other agencies and organizations performing conservation programs in the watershed, Identifies stream reaches with altered habitat conditions that lack necessary habitat types to sustain natural production of fish populations, determines appropriate fish habitat restoration/improvement actions, negotiates with government and private landowners for cooperation and permission to conduct habitat restoration projects, develops program direction in the form of standards and guides for all regional habitat programs; including, but not limited to, Bonneville Power Administration (BPA) National Marine Fisheries Service (NMFS) and state funded fish habitat and screening projects.

Experience

1987-1991 – Oregon Department of Fish & Wildlife. Assistant Project

Leader, Trout Creek Habitat Restoration Project

Duties

Conducted fish habitat surveys, recommended habitat restoration treatments, developed habitat restoration construction contracts, inspected construction contracts, negotiated landowner riparian leases, wrote landowner riparian leases., performed maintenance on riparian improvements such as riparian fencing and instream habitat structures.

Assistant Project Leader (Rod French; Hood River/Pelton ladder project; FTE 0.08)

Education

1986 Oregon State University, Corvallis, Oregon

Degree: B.S. in Fisheries Science

Experience

12/92-Present

Oregon Department of Fish and Wildlife

Assistant project leader on the Hood River/Pelton ladder project (Project No. 88-053-04). Primary responsibilities include: 1) the implementation of project field work, 2) assisting the project leader in the preparation of a research sampling plan to evaluate a hatchery supplementation program and to collect information on the life history and biology of anadromous and resident salmonids in the Hood River subbasin, 3) summarizing and analyzing project data, 4) the purchase of field equipment, 5) the coordination of field work with other project cooperators, 6) assisting the project leader in the preparation of annual progress reports and statements of work, and 7) giving presentations on project results and findings.

Experience gained in 1) the use of downstream migrant screw traps, 2) the use of adult trapping facilities, and 3) the life history and biology of anadromous salmonids.

06/92-11/92

Oregon Department of Fish and Wildlife

Assistant project leader on the Umatilla Hatchery Monitoring and Evaluation Project. Primary responsibilities include 1) the implementation of project tasks designed to collect information on water chemistry; life history and biology of anadromous salmonids; and harvest, 2) the summarization and analysis of project data, 3) assisting the project leader in preparation of annual progress report, and 4) giving presentations at professional society meetings.

01/88-05/92

Oregon Department of Fish and Wildlife

Fisheries Biologist 1 on the Native Trout Research Project. Primary responsibilities include assisting project leader in the collection of data on native trout in Klamath, Harney and Deschutes river subbasins. Data was collected on 1) migration timing, 2) numbers of downstream migrants, temporal and spatial distribution of spawning, 3) life history and biology of resident salmonids, and 4) relative resistance of trout to specific pathogens. Assisted with preparation of monthly and annual reports and with the

preparation of publications for scientific journals. Prepared and presented presentations for professional societies and sportsman's groups.

Report's authored or co-authored

- Buchanan, D.V., A.R. Hemmingsen, D.L. Bottom, R.A. French, and K.P. Currens. 1989. Native trout project. Annual Progress Report of Oregon Department of Fish and Wildlife (Fish Research Project F-136-R), Portland, Oregon.
- Buchanan, D.V., A.R. Hemmingsen, D.L. Bottom, P.J. Howell, R.A. French, and K.P. Currens. 1990. Native trout project. Annual Progress Report of Oregon Department of Fish and Wildlife (Fish Research Project F-136-R), Portland, Oregon.
- Buchanan, D.V., A.R. Hemmingsen, D.L. Bottom, P.J. Howell, R.A. French, and K.P. Currens. 1991. Native trout project. Annual Progress Report of Oregon Department of Fish and Wildlife (Fish Research Project F-136-R), Portland, Oregon.
- Currens, K.P., A.R. Hemmingsen, R.A. French, D.V. Buchanan, C.B. Schreck, and H.W. Li. 1997. Introgression and susceptibility to disease in a wild population of rainbow trout (*Oncorhynchus mykiss*). North American Journal of Fisheries Management. In Press.
- Hemmingsen, A.R., D.V. Buchanan, D.L. Bottom, R.A. French, K.P. Currens, and F.C. Shrier. 1988. Native trout project. Annual Progress Report of Oregon Department of Fish and Wildlife (Fish Research Project F-136-R), Portland, Oregon.
- Hemmingsen, A.R., R.A. French, D.V. Buchanan, D.L. Bottom, and K.P. Currens. 1992. Native trout project. Annual Progress Report of Oregon Department of Fish and Wildlife (Fish Research Project F-136-R), Portland, Oregon.
- Hemmingsen, A.R., R.A. French, and D.V. Buchanan. 1993. Native trout project. Annual Progress Report of Oregon Department of Fish and Wildlife (Fish Research Project F-136-R), Portland, Oregon.
- Olsen, E.A., R.A. French, and J.A. Newton. 1994. Hood River and pelton ladder evaluation studies. Annual Progress Report of Confederated Tribes of the Warm Springs Reservation and Oregon Department of Fish and Wildlife (Project Numbers 89-29, 89-29-01, 89-053-03, 89-053-04, and 93-019; Contract Numbers DE-BI79-89BP00631, DE-BI79-89BP00632, DE-BI79-93BP81756, DE-BI79-93BP81758, DE-BI79-93BP99921) to Bonneville Power Administration, Portland, Oregon.
- Olsen, E.A., R.A. French, and A.D. Ritchey. 1995. Hood River and pelton ladder evaluation studies. Annual Progress Report of Oregon Department of Fish and Wildlife and Confederated Tribes of the Warm Springs Reservation (Project Numbers 88-29, 89-29-01, 89-053-03, 89-053-04, and 93-019; Contract Numbers DE-BI79-89BP00631, DE-BI79-89BP00632, DE-BI79-93BP81756, DE-BI79-93BP81758, DE-BI79-93BP99921) to Bonneville Power Administration, Portland, Oregon.

Olsen, E.A., R.A. French, and A.D. Ritchey. 1996. Hood River and pelton ladder evaluation studies. Annual Progress Report of Oregon Department of Fish And Wildlife (Project Numbers 88-29, 89-29-01, 89-053-03, 89-053-04, and 93-019; Contract Numbers DE-BI79-89BP00631, DE-BI79-89BP00632, DE-BI79-93BP81756, DE-BI79-93BP81758, DE-BI79-93BP99921) to Bonneville Power Administration, Portland, Oregon.

Assistant Project Leader (Steve Springston; Fifteenmile Creek project; FTE 0.04)

Education

1976 HS diploma; 15 credit hours of post secondary education

Degree: B.S. in Fisheries Science

Experience

02/88-Present

Oregon Department of Fish and Wildlife

Assistant Project Leader on the Fifteenmile Creek Habitat Restoration Project (Project #86-79-01). Primary responsibilities include but are not limited to: 1) assisting project leader with administration and budget preparation, 2) develop riparian lease agreements, 3) write construction specifications and contracts, 4) administer construction contracts, 5) develop cooperative agreements with private landowners and other agencies, 6) provide feedback and recommendations to the project leader, 7) assist project leader and other agency's with grant applications, 8) write annual, monthly, and special reports, 9) enter data into computer, 10) purchase all field supplies, 11) write purchase orders, transmittals, 12) represent ODFW at meetings, 13) conduct field tours and make presentations for schools, agency's and special interest groups, 14) monitor leased riparian habitat, 15) collect and summarize stream temperature data, flow data, spawning ground data, 16) provide daily task guidance and set work priorities for one Technician II and one Technician I, and 17) direct volunteer work crews performing project maintenance.

Section 10. Information/technology transfer

Data collected from this project will be summarized in an annual progress report and distributed to fishery managers. Project personnel will present information to local watershed council's and sport's groups; the NPPC, CBFWA, CTWS, and BPA; and ODFW staff.